**What is claimed is:**

1. A distortion compensation apparatus which compensates for a distortion characteristic of an amplifier, comprising:

an adjacent channel leakage power extraction unit extracting at least adjacent channel leakage power of a main channel signal to be processed in a distortion compensating process from an output signal of the amplifier;

a distortion compensation coefficient computation unit converting an amplitude value and a phase value of a distortion compensation coefficient into respective gene types, and obtaining the distortion compensation coefficient based on a genetic algorithm using the adjacent channel leakage power value or the adjacent channel leakage power ratio obtained from the adjacent channel leakage power value as an evaluation function; and

a distortion compensation coefficient application unit applying the distortion compensation coefficient computed by said distortion compensation coefficient computation unit as an input signal of the amplifier.

2. The apparatus according to claim 1, wherein said gene type is generated for each of a power value of an input signal of the amplifier, an amplitude value, a function of the power value, or a value distinguished by a function value of the amplitude value.

3. The apparatus according to claim 1, wherein said gene type is given as a series represented by binary values indicating an amplitude and a phase value of the distortion compensation coefficient.

4. The apparatus according to claim 1, wherein said distortion compensation coefficient computation unit sequentially computes a distortion compensation coefficient from a largest value to a smallest value of a power value of an input signal to the amplifier.

5. The apparatus according to claim 1, wherein said distortion compensation coefficient computation unit computes all distortion compensation coefficients, and then repeats

sequentially updating distortion compensation coefficients from a largest power value to a smallest power value of an input signal to the amplifier.

6. The apparatus according to claim 4, wherein said distortion compensation coefficient computation unit uses a gene type corresponding to a larger power value already obtained as an initial value of a gene type corresponding to the power value of the input signal, or a similar gene type.

7. The apparatus according to claim 2, wherein said distortion compensation coefficient computation unit sets a value for discrimination of the gene type as discrete values of a power value of the input signal, obtains a distortion compensation coefficient corresponding to the discrete values, and obtains a distortion compensation coefficient in an interpolating process for a power value between the discrete values.

8. The apparatus according to claim 1, wherein said distortion compensation coefficient

computation unit obtains a distortion compensation coefficient corresponding to a power value of the input signal larger than a predetermined value using a genetic algorithm, and obtains a distortion compensation coefficient corresponding to a power value of the input signal smaller than the predetermined value in a method other than the genetic algorithm.

9. The apparatus according to claim 8, wherein said method other than the genetic algorithm uses the power value of the input signal as is.

10. The apparatus according to claim 8, wherein said method other than the genetic algorithm performs an interpolating process on the power value of the input signal.

11. The apparatus according to claim 1, wherein said distortion compensation coefficient application unit provides an amplitude value of the distortion compensation coefficient through a gain adjuster, and a phase value through a phase shifter for an input signal of the amplifier.

12. The apparatus according to claim 1, wherein said distortion compensation coefficient application unit complex-multiplies an input signal of the amplifier by the distortion compensation coefficient.

13. The apparatus according to claim 1, wherein said distortion compensation coefficient application unit obtains the distortion compensation coefficient as a complex difference signal between an input signal to the amplifier and a signal obtained after distortion compensation, and performs a distortion compensating process on the input signal by increasing/decreasing an original input signal using the difference signal.

14. The apparatus according to claim 1, wherein said adjacent channel leakage power extraction unit demodulates output of the amplifier, performs a Fourier transform on the demodulated output, and obtains an adjacent channel leakage power value or an adjacent channel leakage power ratio.

15. The apparatus according to claim 1, wherein said adjacent channel leakage power extraction

unit demodulates output of the amplifier, and obtains an adjacent channel leakage power value or an adjacent channel leakage power ratio from the demodulated output using a digital filter.

16. The apparatus according to claim 1, wherein

said adjacent channel leakage power extraction unit passes output of the amplifier through a band pass filter, and obtains a detection result through a power detector, thereby obtaining an adjacent channel leakage power value or an adjacent channel leakage power ratio.

17. The apparatus according to claim 1, wherein

said adjacent channel leakage power extraction unit varies a crossover rate of the genetic algorithm according to adaptability of the gene type.

18. The apparatus according to claim 1, wherein

said adjacent channel leakage power extraction unit varies a mutation rate of the genetic algorithm according to adaptability of the gene type.

19. The apparatus according to claim 1, wherein

said adjacent channel leakage power extraction unit varies a frequency of succeeding generations of the genetic algorithm according to adaptability of the gene type.

20. A distortion compensating method for compensating for a distortion characteristic of an amplifier, comprising:

extracting at least adjacent channel leakage power of a main channel signal to be processed in a distortion compensating process from an output signal of the amplifier;

converting an amplitude value and a phase value of a distortion compensation coefficient into respective gene types, and obtaining the distortion compensation coefficient based on a genetic algorithm using the adjacent channel leakage power value or the adjacent channel leakage power ratio obtained from the adjacent channel leakage power value as an evaluation function; and

applying the distortion compensation coefficient computed in said distortion compensation coefficient computing step as an input signal of the amplifier.